

Summary Description of the
Specific Targeted Research Project (STREP)

**Scanning Policy Scenarios for the Transition to
Sustainable Economic Structures**

TranSust.Scan

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Co-ordinator	Stefan P. Schleicher Austrian Institute of Economic Research Vienna, Austria Stefan.Schleicher@wifo.at Fax: +43 (1) 798-9386 Phone: +43 (676) 591-3150
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Participants

- | | | | |
|----------|---|-----------|--|
| 1 | WIFO Austria
Austrian Institute of Economic
Research | 7 | IfW Germany
Institute for World Economics,
Kiel |
| 2 | ZEW Germany
Centre for European Policy
Research | 8 | LIFEA Poland
Lodz Institute of Forecasts and
Economic Analyses, University
of Lodz |
| 3 | SMASH France
Société de Mathématiques
Appliquées et de Sciences
Humaines | 9 | CSIC Spain
Spanish Council for Scientific
Research |
| 4 | ECN Netherlands
Energy Research Centre of the
Netherlands | 10 | UCD Ireland
University College, Dublin |
| 5 | FEEM Italy
Fondazione Eni Enrico Mattei | 11 | UniHH Germany
Centre for Marine and Climate
Research, University of
Hamburg |
| 6 | IVM Netherlands
Department of Economics and
Technology, Institute of
Environmental Studies, Vrije
Universiteit Amsterdam | 12 | IEEP Czech Republic
University of Economics
Prague |

Table of Contents

1 SCIENTIFIC AND TECHNOLOGICAL OBJECTIVES OF THE PROJECT.....1

1.1 INTRODUCTION.....1

1.2 MOTIVATION.....2

1.3 AN OVERVIEW ON TRANSUST.SCAN'S OBJECTIVES.....3

1.4 POTENTIAL IMPACTS5

2 PROJECT DESIGN6

2.1 OVERVIEW6

2.2 DESIGN OF THE WORKPLAN7

2.3 DESCRIPTION OF THE WORK PACKAGES.....9

2.3.1 *Work package 1: Integrating and extending the analytical framework*9

2.3.2 *Work package 2: Dealing with extended facets of sustainability*..... 10

2.3.3 *Work package 3: Developing policy scenarios*..... 12

2.3.4 *Work package 4: Interaction with non-European institutions* 13

2.3.5 *Work package 5: Management, internal and external dissemination*..... 15

2.4 TRANSUST.SCAN'S APPROACH TOWARDS ITS OBJECTIVES..... 17

2.5 DELIVERABLES LIST 21

Project summary

The focus of this research project will be to scan a wide range of policy scenarios as to their relevance for the EU Sustainable Development Strategy in view of Impact Assessment. Embedded in the TranSust network of researchers, with its expertise in modelling the transition to sustainable economic structures, the project will link and expand an extensive set of available models. Using a scenario approach in cooperation with stakeholders, these models will address the strategic policy options.

On one hand, existing models will be extended to reflect the multifunctionality aspect of sustainability policies and their trade-offs with other policies. In addition to the traditional economic, environmental and social issues, the expanded models will address the new policy agenda as put forward by the Lisbon Strategy of the European Union, the World Summit for Economic Development, and the 2005 Review of the EU Sustainable Development Strategy. The models will therefore be able to deal with competitiveness, economic development, security, the preparations for Beyond-Kyoto policies, and interaction between technological change and the use of natural resources.

On the other hand, this enhanced set of models will be used for a comprehensive analysis of a wide range of policy scenarios. In designing the scenarios, a participatory approach will emphasise close cooperation with stakeholders, Commission services, and international organisations. By backcasting the path dependency and by simulating the range of assumptions, the scenario analysis will reveal the sensitivity of forecasts. The methodology and databases will be made available to institutions involved in policy decision-making.

TranSust.Scan aims to enhance European competence and expertise for dealing with the emerging extended facets of sustainability and their implications for policy design. Besides supporting strategic policy preparation for the European Union, the dissemination activities will address non-European institutions, in particular in North America and Asia.

The project contributes to two strategic objectives addressed in the FP6 by improving integration and co-ordination of research in Europe, which up to now has largely been fragmented. In addition, TranSust.Scan is targeted at strengthening the competitiveness of the European economy, solving major societal questions and supporting the formulation and implementation of other EU policies.

1 Scientific and technological objectives of the project

1.1 Introduction

At the **Lisbon Summit** in March 2000, a new strategic goal for the European Union was established. The European Council formulated a ten-year strategy to make the EU the world's most dynamic and competitive economy. Under the strategy, a stronger economy will drive job creation alongside social and environmental policies that ensure sustainable development and social inclusion. The Lisbon Strategy thus touches on most of the EU's economic, social and environmental activities, thereby strengthening the objective of sustainable development with a special focus on competitiveness.

In the sequel at the Gothenburg Summit in June 2001, the **EU Strategy for Sustainable Development** was adopted. This strategy aims at a restructuring of the European economy by means of integrating economic welfare, environmental integrity and social coherence. The transition to these innovative economic structures poses a major challenge to economic policy design.

The **World Summit on Sustainable Development** in September 2002 emphasised the links to economic development, economic security, dissemination of technologies, and the social issues of health and aging in a world that is growing in population. These goals overlap with the targets put forward by the **United Nations Millennium Project**.

The **2005 Review of the EU Sustainable Development Strategy** serves for initial stock taking and future orientation and puts sustainable development into the context of the Lisbon Strategy and the EU Social Agenda.

Originating from an FP5 project with the same acronym, TranSust has evolved as a network of researchers devoted to modelling the transition to sustainable economic structures. The TranSust community aims at contributing to a new generation of modelling tools that are more adequate for dealing with sustainability issues. Key results obtained so far emphasise a better integration of all types of technical progress, an extension of the types of stocks ranging from reproducible capital to knowledge and natural capital, and innovative measures of welfare that are based on flows and stocks.

TranSust.Scan intends to build on this expertise by developing and scanning a wide range of policy scenarios as to their relevance for the EU Sustainable Development Strategy in view of Impact Assessment. Key feature of the research activity are:

- Expanding the analytical modelling framework for dealing with the extended facets of sustainability.
- Involving stakeholders by a consultation process in the scenario building.
- Forecasting of current policies and trends.
- Backcasting for identifying policy paths for achieving specific targets.
- Simulation of the sensitivity of assumptions.
- Consensus and awareness building for policy recommendations about desirable scenarios.

The overall objective is to develop within an adequate analytical framework a wide range of scenarios for evaluating sustainability policies. For this purpose, existing models of the TranSust network will be expanded to enable an Impact Assessment. Parallel to this a consultation process with stakeholders will be initiated for designing the spectrum of scenarios. All scenarios will be evaluated according to a unified and therefore comparable Impact Assessment. Emphasis will be given to the multifunctionality aspect of sustainability policies and the trade-offs with other policies. By opening this wider

perspective on sustainable development, the activities of TranSust.Scan can thus provide support for current policy decisions and for decisions about future research targets to support the EU Sustainable Development Strategy.

1.2 Motivation

For more than a decade, the EU has taken a leading role in the promotion of sustainable development (SD), as is emphasised by various key political decisions ranging from the **Treaty of Maastricht (1992)** to the **Gothenburg European Council (2001)**.

Recently, however, a number of important new policy issues that are of major concern in Europe indicate that a new approach of sustainability will be required in order to deal with them appropriately. This development requires a new way of working with models, and therefore calls for an expansion of the conventional dimensions of sustainability.

A milestone in this context is the **Lisbon Strategy**, which is a commitment to bring about economic, social and environmental renewal in the EU. The European Commission's annual Spring Report examines the strategy in detail. The recent 2004 report acknowledges progress in certain domains, emphasising however significant problems which hold back the entire strategy. Therefore, the need for an energetic implementation of reform in all the different spheres through integrated strategies is stressed. Indeed, insufficient implementation of the Lisbon strategy could produce significant net costs for Europe, e.g. in terms of reduced economic welfare and a growing gap with some of the large industrial partners in the fields of education and R&D. In order to promote progress towards the Lisbon targets, better ways of incorporating the broader aspects of sustainability are required.

A second recent policy event that has strengthened the commitment to sustainable development - and therefore the need for better modelling approaches - is Russia's decision to ratify the Kyoto Protocol. The Russian ratification opens the way for the Kyoto Protocol to go into effect, thus sending a strong signal for international climate policy.

A third issue that adds weight to new sustainability considerations is the global concern about security. Economic development has obviously neglected the interaction with security. Unfortunately, economic and human security, i.e., the capacity to avoid violent conflict, overcome vulnerability, and respond positively to environmental change, is increasingly threatened throughout the world. In this context, energy security and other developments on the energy market play a fundamental role. New strategies for tackling the concept of security are needed in order to guarantee sustainable development.

Economic development and population growth also trigger the fourth issue that calls for a more extensive sustainability analysis, the increasing pressures on natural resources. Management of natural resources is the front line of the struggle for more sustainable and equitable development, given that environmental degradation is one of the first indications of unsustainable social and economic systems. Recent indicators show that, under current practices, renewable resources such as water and forests, are under extreme pressure, and their productivity is in decline.

Finally, technological change, with its impact on all types of resources - and ultimately on human welfare - continues to be an integrating element of these issues .

As a consequence of these crucial policy developments, the need arises to deal with new dimensions - beyond the three conventional pillars of sustainability - in order to live up to the requirements of day-to-day policy decisions. By thoroughly analysing the mutual relationships between environmental, economic, and social trends, and by developing a scientifically sound forecasting framework, this project contributes in particular to the need for improved access to future scenarios for strategic policy preparation which has become evident in the general context of the EU Sustainable Development Strategy.

1.3 An overview on TranSust.Scan's objectives

The project aims at strengthening the objectives of the SSP Priority "**Underpinning the economic potential and cohesion of a larger and more integrated European Union**", by addressing the specific area of "*Forecasting and developing innovative policies for sustainability in the medium and long term.*" Let us now specify its relevant contribution.

The overall objective of TranSust.Scan is to further investigate issues crucial for enabling sustainable development. In particular, a wide range of policy scenarios will be scanned as to their relevance for the EU Sustainable Development Strategy in view of Impact Assessment. The project is thus orientated along the lines of general policy context of the SSP Priority as it can be considered important to provide a **major support to the EU strategy for Sustainable Development (SD)**. This strategy was agreed upon in 2001 at the Gothenburg Summit and was enlarged to an international scale in the context of the Johannesburg Summit on Sustainable Development in 2002. In addition, the strategy has gained further attention in the context of the Lisbon strategy, which focuses on the importance of competitiveness to strengthen sustainable development, resolving major societal issues and supporting the formulation and implementation of other EU policies. Along these lines, TranSust.Scan also emphasises the multifunctionality aspect of sustainability policies and their trade-offs with other policies, contributing thus to a further element emphasised in the relevant SSP Priority, the **6th Environment Action Programme** with particular focus on the interactions between different policies.

From the very beginning the concept of sustainable development was meant to be relevant for more than just environmental issues. The pioneering work of the World Council on Environment and Development (WCED, 1987) refers to sustainable development as "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*"

In the years since the formulation of the above definition, many political discussions have adopted a relatively narrow focus in that they have often concentrated on areas where sustainability can be defined directly or exclusively in terms of some specific environmental problem. In contrast to this, the present research project aims to promote a wider notion of sustainability which is actually more in keeping with the original intention of the WCED pioneers. Yet, although the concept of sustainable development is far from being fully agreed upon either in a political or in an economic perspective, recent policy developments also seem to stress the need to broaden the narrow interpretation of sustainability. The project thus builds on the experience and insights gained by the TranSust network and extends its analysis on how the transition to sustainable economic structures should be performed. In particular, it concentrates on **gathering evidence** to help answer the following question:

- **Which economic structures are able to support economic welfare in the long-run without creating burdens on social, economic and environmental resources?**

Hardly any of the currently available models can claim to provide an answer to this question. A number of policy analyses in the context of energy policies, transport policies and the implementation of climate policies along the lines of the Kyoto Protocol revealed considerable weaknesses, since the models used were mainly designed in flow-oriented paradigms that neglected the dynamic interaction with stocks. Moreover they did not provided an in-depth examination of surrounding uncertainties regarding sustainability challenges, cost of precautionary action and the policy signals. They failed to clarify the economic implications of many policy recommendations and debates. The key objective of

TranSust.Scan is thus to extend current modelling approaches by including a wider range of sustainability aspects in order to appropriately design strategies aimed at a transition to sustainable economic structures. In particular, by scanning a wide range of policy scenarios as to their relevance for the **EU Sustainable Development Strategy** in view of **Impact Assessment**, TranSust.Scan aims at addressing together with stakeholders in a scenario approach the strategic policy options.

Through its research focus, TranSust.Scan thus contributes both to several general research objectives of the SSP Priority in consideration and to the specific objectives of the task addressed, as follows:

Development of tools for modelling environmental and climate change policies

Within its first work package, TranSust.Scan emphasises the need to broaden the conception of sustainable development and therefore aims at modelling an extended range of sustainability facets. By extending and linking a rich set of existing models to better capture various additional sustainability aspects, a more comprehensive modelling approach will be prepared. This enriched perspective on elements essential for sustainable development is expected to enable an improvement of the tools currently available for modelling air pollution and climate change policies in view of a successful future orientation of the EU SD strategy.

Provision of a forecasting framework based on scientifically sound sustainability scenarios

In a first step, TranSust.Scan extends existing models in order to contribute to the European Commission's specific needs of their work on **Impact Assessments**. Embedded into the TranSust network of researchers, with its expertise on modelling the transition to sustainable economic structures, a rich set of available models will be linked and expanded as to the multifunctionality aspect of sustainability policies and their trade-offs with other policies. In addition to the traditional economic, environmental and social issues the expanded models will address the new policy agenda as put forward by the Lisbon Strategy of the European Union and the World Summit for Economic Development.

The uncertainties of environmental impacts will be analysed, as well as their relevance for policy making. To what extent does it matter that uncertainties in external impacts of e.g. energy production or other economic activities, and their associated damage costs, are inherently present and potentially large? To what extent effect these uncertainties the robustness of policy strategies? These sort of questions will also be addressed in the current proposal

All the findings obtained with respect to the extended sustainability facets will directly feed in the development of the policy scenarios. The linkages between competitiveness aspects, technological change, economic security, economic development, social issues, natural resources and Beyond-Kyoto policies can not only indicate the different future paths, but also highlight the coherence and consistency of how different variables move together. Indeed, the workpackage also investigates and disentangles the mutual relationships and interactions between environmental, economic and social dimensions to appropriately capture the notion of sustainability and to analyse and understand the strengths and directions of those links. The key variables for different future policy scenarios will thus become clear. In this way, TranSust.Scan directly addresses the needs to have **better access to future scenarios for strategic policy preparation** and to better **specify the mutual relationships between environmental, economic and social trends**, as stressed by the SSP Priority.

In a second step, these enhanced set of models will be used for a comprehensive analysis of a wide range of policy scenarios. For the designs of the scenarios a

participatory approach will be emphasised by a close cooperation with stakeholders, Commission services, and international organisations. The scenario analysis will reveal by backcasting the path dependency and by simulating the range of assumptions the sensitivity of forecasts. The methodology and databases will be made available to institutions involved in policy decision-making. TranSust.Scan thus contributes to the objective of **developing a robust and scientifically sound forecasting framework to develop harmonised middle and long term baseline and alternative policy scenarios**.

In order to ensure the implementation of the SD strategy across the enlarged EU and at the world level, **partners from all over the enlarged EU** are involved in the support action, and linkages to modelling communities outside of Europe are suggested. Indeed, workpackage 3 aims at interactions with non-European modelling communities in order to include new ideas and results as well as to stimulate global efforts for improving the capability of economic models to deal with sustainability issues. TranSust.Scan emphasises thus the importance of a strong dissemination component by establishing communication channels with non-European institutions, in particular in North America and Asia.

1.4 Potential impacts

The project is expected to have a strong impact in creating a new perspective on the field of sustainable development. TranSust.Scan addresses thus a crucial policy domain of the European Union. By widening the conventional sustainability dimensions with additional aspects that have emerged as important in setting the floor for a comprehensive analysis, more adequate and successful strategies for the transition to sustainable economic structures can be developed. Currently available models will be extended as to the multifunctionality aspect of sustainability policies and their trade-offs with other policies. In addition to the traditional economic, environmental and social issues the expanded models will address the new policy agenda as put forward by the Lisbon Strategy of the European Union and the World Summit for Economic Development. The models will, therefore, be able to deal with competitiveness, economic development, security, the preparations for Beyond-Kyoto policies, the interaction between technological change and the use of natural resources, as well as the emerging social problems related to health and aging. Based on the insights regarding the extended sustainability aspects and in close dialogue with stakeholders as well as relevant international organisations, a range of future policy scenarios will be designed to address strategic policy options.

Summarising, the project emphasises three components in order to ensure an optimal exploitation of its results:

- A strong focus on **communication** within and beyond the project consortium.
- A strong focus on the **involvement of relevant stakeholders** to maximise the project's policy relevance.
- A strong focus on **dissemination** of the insights gained for fostering consensus building about desirable policies.

Based on this strategy, TranSust.Scan is expected to provide major decision support for the EC by improving the understanding on the complexities of sustainable development and identifying future policy scenarios aimed at supporting the **EU Strategy for Sustainable Development**.

2 Project Design

2.1 Overview

TranSust.Scan is aimed at enhancing European competence and expertise for dealing with the emerging extended facets of sustainability and their implications for policy design.

Given that the TranSust project has become a meeting point of European researchers and a platform for exchanging experience and ideas aimed at improving the current state of economic and environmental models by focusing on sustainability issues, we suggest building on its expertise in the following ways:

- The existing **network of researchers** interested in modelling the transition to sustainable economic structures is going to be extended throughout Europe with worldwide linkages. Communication within the scientific community is thus to be improved. In addition, the dialogue with relevant **stakeholders** within and outside the Commission will be fostered.
- TranSust.Scan aims at moving to the next generation of model designs. For this purpose, the project aims at widening the conception of sustainability and verifying the impacts of this broader concept by **collecting available information** and utilising **existing modelling approaches**. Both quantitative and qualitative elements will be combined. In particular, the project will build upon the results of already existing models of recognised research institutions, by expanding and/or linking models.
- Within the project activities, special attention will be given to the **dissemination and analysis** of the existing research on the range of sustainability aspects. Based on the findings emerging from the extended sustainability dimensions, a number of **scientifically sound policy scenarios** will be scanned as to their relevance for the EU Sustainable Development Strategy in view of Impact Assessment.
- Finally, in the comprehensive analytical framework a set of **consistent environmental sustainability scenarios** will be developed. The insights arising from this research will be translated into a **set of policy relevant recommendations**.

To ensure optimal use of the project's results, special attention will be given to the **dissemination of information, existing research results and new insights**. This dissemination will be strengthened both within and outside the network of project partners itself. Indeed, in particular, the second strand of information flow is considered important in order to ensure optimum dissemination of results to the larger community interested in sustainability issues. For this purpose, the dissemination plan of TranSust.Scan is based on four main components:

- **The Internet**

To enable a wide diffusion of the insights collected and obtained within TranSust.Scan, the Internet will be used as the main communication tool within and beyond the network. The website coordinated by TranSust.Scan will build on the already existing Internet page of the TranSust project, which has become a well-established platform of information exchange for people interested in the transition to sustainability. In addition to the possibility of information exchange and communication, the website will also act as a fast publishing platform that makes results and insights of the current project available in the fastest way in order to support the improvement of strategies aimed at sustainable development.

- **Several scientific events**

In order to increase the communication among the different research groups involved in the project and to open its discussions to the wider research and policy community, both on a European and a global scale, the organisation of several small meetings, a number of workshops plus two conferences is envisaged. In particular, two small meetings are foreseen to foster a close cooperation with stakeholders, Commission services, and international organisations in a participatory approach. Furthermore, three scientific workshops are planned, where the existing research and new insights will be disseminated. The final conference will draw the lessons learnt during TranSust.Scan and highlight the insights gained for the support of current and future policy decisions. In particular, it will be specified how the results of the project translate into support for the design of research and policies of the European Commission. In addition, future research needs will be identified in cooperation with invited policymakers.

- **A series of working papers**

In correspondence to the work packages and its Tasks, a series of working papers will be prepared to ensure the best use of the envisaged activities. These working papers will be developed during the project and immediately made available to the wider scientific and policy community. In this way, the progress of the project will be disseminated without delay. The working papers will serve as references on the new topics dealt with in the project, and are therefore aimed to support decisions on current policies.

- **A final publication in book form**

In addition to the quick dissemination of the working papers, the main insights and corresponding policy recommendations gained from the project will be collected in a final publication. This final product, in book form, will be an edited collection of articles summarising both the main existing research and outlining the potential improvements of the extended sustainability aspects. The publication should serve as a reference on sustainability scenario building, including findings on the design of models for sustainability issues while having the objective to be accessible, objective, and come to be viewed as a casebook of use to the policy community and academics.

In addition, TranSust.Scan will open a **dialogue with non-European research communities** by initiating joint workshops and conferences. In this way, interaction with research communities outside of Europe will be fostered in order to ensure the achievement of the most comprehensive knowledge on aspects related to the transition to sustainable economic structures. An important aim is to extend the network of excellence for research groups interested in sustainability issues that has been initiated by the TranSust project to include experts from other countries and disciplines. External quality assurance and access to information from the non-European community represent the main implications of this strategy. Given a broader base of knowledge, the impact of the whole project is expected to increase.

2.2 Design of the workplan

The project will be conducted over 30 months and organised in five work packages with the following contents:

- **Workpackage 1: Integrating and extending the analytical framework**
The core models of TranSust are prepared for Sustainability Impact Assessment (SIA) and joint policy simulations.
- **Workpackage 2: Dealing with extended facets of sustainability**
The traditional economic, environmental and social dimensions of sustainability are extended.

- **Workpackage 3: Developing policy scenarios**
Based on a consultation process with stakeholders and a harmonised baseline a wide range of policy simulations is generated.
- **Workpackage 4: Interactions with non-European institutions**
The issues and results of the project will be presented for feedback to relevant institutions in the United States, Australia and Japan.
- **Workpackage 5: Management, internal and external dissemination**
The management tasks involve quality assurance within the project and the communication with stakeholders.

Table 1: Workpackage list

WPL	Workpackage list					
Work package No	Workpackage title	Lead contractor No	Person-months	Start month	End month	Deliverable No
WP-1	Integrating and extending the analytical framework	IVM	18,25	2	30	4, 5, 6, 7, 9
WP-2	Dealing with extended facets of sustainability	IfW	24,5	2	30	4, 5, 6, 7
WP-3	Developing policy scenarios	UCD	28,5	7	30	4, 6, 7, 8, 9, 10
WP-4	Interaction with non-European institutions	FEEM	2,5	1	30	1, 4, 8, 9, 10
WP-5	Management, internal and external dissemination	WIFO	7	1	30	1,2, 3, 11
	TOTAL		80,75			

The design of the work packages emphasises a participatory approach by establishing an accompanying consulting process with stakeholders that serves shaping the policy scenarios and evaluating them as to their desirability and policy relevance. Similarly all project partners participate in all work packages (except in the management tasks) in order to foster capacity building and to make use of the full knowledge capital of the project network.

However, let us emphasise that the different tasks will be led and accomplished by the project partners with the highest relevant background knowledge, with inputs of all participants that will be provided at the project meetings and through the e-mail communication among the project partners. In particular, the kick-off meeting of TranSust.Scan that took place in Brussels on the 21st of February 2006 clarified the topics that will be tackled by the project in order to benefit in a best-possible way from the specific expertise of the complementary project FORESCENE.

Before going into detail of the specific tasks to be covered by TranSust.Scan, the next section will provide a brief overview on the work programme by the project. Against this background, Section 2.4 will identify the specific approach with which TranSust.Scan aims at fulfilling its objectives.

2.3 Description of the work packages

2.3.1 Work package 1: Integrating and extending the analytical framework

Work package number	1	Start date or starting event:				Month 2							
Participant id	1	2	3	4	5	6	7	8	9	10	11	12	
Person-months per participant	1,5	3	1	1,5	1,5	1,5	2	2	0,75	1	1	1,5	

Objectives

Developing the analytical framework for consistent scenario building by preparing the core models that are currently available in the TranSust network for the policy simulations.

Description of work

Two integrating activities are necessary for preparing the core models for the policy simulations. First, the models will be extended, if necessary, as to the list of variables needed for *Sustainability Impact Assessment (SIA)*. Second, matching input variables will be defined for the forecasting, simulation, and backcasting analyses.

The result of this task will be a comprehensive analytical framework that integrates the comparative advantages of various model designs and emphasises issues related to sustainability.

For specific topics, as competitiveness, technological change, economic development and natural resources, options for linking a number of complementary satellite models to the core models will be assessed. A methodology analysed in more detail will be the decomposition approach. In essence this involves an approximation of the satellite model by numerical differencing.

Furthermore systematic sensitivity analysis will be another methodological feature employed for enhancing the robustness and scientific quality of the model simulations.

Finally, for the sake of transparency and reproducibility all stages of the simulation exercises will be thoroughly documented and made available on the TranSust website.

Expected results

- An integrated set of core models that are suitable for joint policy simulations and capable of Sustainability Impact Assessment.
- Extended facets of sustainability can be taken into account by linking a set of satellite models to the core models.
- Systematic sensitivity analysis will enhance the robustness and scientific quality of the policy simulations.
- All stages of the simulation exercises will be thoroughly documented and made available on the TranSust website.

Milestones

- Month 5: Workshop 1 (in co-operation with WP 2)
- Month 10: Workshop 2 (in co-operation with WP 2 and 3)
- Month 23: Workshop 4 (in co-operation with WP 2 and 3)

- Month 29: Final Working Papers as specified above

Deliverables

- Month 5: Workshop 1 (in cooperation with WP 2) on preparing the core models for Sustainability Impact Assessment and options for linking the core models with the extended models.
- Month 5: Draft of a Working Paper documenting the augmented core models.
- Month 10: Workshop 2 (in co-operation with WP 2 and 3) on implementing systematic sensitivity analysis .
- Month 14: Participation in Workshop 3 to learn the lessons from the first policy simulations
- Month 19: Draft of a Working Paper reporting systematic sensitivity analysis with the core models.
- Month 23: Workshop 4 (in co-operation with WP 2 and 3) Refining the policy simulations
- Month 29: Final version of the Working Papers

2.3.2 Work package 2: Dealing with extended facets of sustainability

Work package number	2	Start date or starting event:				Month 2							
Participant id	1	2	3	4	5	6	7	8	9	10	11	12	
Person-months per participant	1	1,75	1,25	2	2,5	2,25	3,5	3	0,75	1,75	2,5	2,25	

Objectives

Adding the dimensions of competitiveness, technological change, economic development, and the use of natural resources, as water and soil, and the issues of security to sustainability policy design.

Description of work

This workpackage extends the traditional economic, environmental, and social dimensions of sustainability. A number of additional dimensions, as competitiveness, technological change, economic development, and the use of natural resources, as water and soil, and the issues of security have emerged as most relevant in the context of policies targeted towards sustainability.

Five tasks will investigate these new issues as to the requirements for modelling. Both methodological work regarding the extension of current economy-environment models and steps toward implementing these extensions will be done. The overall objective is to expand existing models in order to enable an Impact Assessment.

Accordingly the activities in this workpackage focus on the following issues:

- As to *competitiveness*, indicators and policies are derived in an adequate modelling framework for improving the position of the EU economy.
- As to *technological change*, the parameterisation of the dynamics, the incorporation into

models, and the handling with uncertainty will be investigated.

- As to *economic development*, focus will be given to the integration of development strategies that match sustainability requirements.
- As to *natural resources*, the crucial role of limited resources as soil and water, but also biodiversity will be put into the framework of sustainability strategies.
- As to *security*, emphasis will be given in particular to the role of energy supplies for maintaining economic and social security.

These issues will be dealt with in an analytical framework that enables addressing this extended dimensions of sustainability in the policy simulations.

Expected results

Decision support for current EU policies through

- A set of satellite models that are able to address extended issues of sustainability as competitiveness, technological change, economic development, and security.
- An operational procedure for linking this satellite models to the core models in policy simulations.
- Better insights into the multidimensional aspects of policy design in the context of the EU Sustainability Strategy.

Milestones

- Month 5: Workshop 1 (in co-operation with WP 1)
- Month 10: Workshop 2 (in co-operation with WP 1 and 3)
- Month 14: Workshop 3 (in co-operation with WP 3)
- Month 18: Conference 1 (in co-operation with WP 4)
- Month 23: Workshop 4 (in co-operation with WP 1 and 3)
- Month 28: Conference 2 (in co-operation with WP 4)
- Month 30: Final Reports as specified above

Deliverables

- Month 5: Workshop 1 (in co-operation with WP 1) on designing the extended models for Sustainability Impact Assessment and options for linking them to the core models.
- Month 5: Draft of a Working paper documenting the concepts for the extended sustainability issues and the corresponding models.
- Month 10: Workshop 2 (in co-operation with WP 1 and 3) on implementing the extended models into the comprehensive analytical framework.
- Month 14: Workshop 3 (in co-operation with WP 3) on including the first results of policy simulations
- Month 23: Workshop 4 (in co-operation with WP 1 and 3) Refining the policy simulations
- Month 29: Final version of the Working Paper

2.3.3 Work package 3: Developing policy scenarios

Workpackage number	3	Start date or starting event:			Month 7							
Participant id	1	2	3	4	5	6	7	8	9	10	11	12
Person-months per participant	2	2,5	2	3	2,5	2,5	2,5	3,25	1	2,5	1,75	3

Objectives

Developing a wide range of policy scenarios based on stakeholder consultations and evaluating forecasts, simulations, and backcasts by Sustainable Impact Assessment (SIA)

Description of work

Based on the analytical framework established in Work Packages 1 and 2 the following procedure will be applied for generating a wide range of policy scenarios that serve the purpose of strategic policy preparation in particular in the context of the EU Sustainable Development Strategy:

- A **consultation process** will accompany all stages for developing the policy scenarios, ranging from the design, the evaluation, and the consensus building for certain policy strategies.
- The **time** horizon for all analyses will be a medium and long term range 2015 – 2030.
- The **scenario building** work will involve
 - **forecasting** of future states given the implementation of currently known policies,
 - **simulation** of deviations from business-as-usual strategies
 - **backcasting** the policy patterns needed for achieving certain policy targets.
- The **common evaluation criterion** for all scenarios will be *Sustainable Impact Assessment (SIA)*.

In order to enhance policy-relevance of the policy simulations, besides stakeholder consultations research results by other institutions, e.g. OECD, EEA, IEA and JRC, will be taken into account.

By investigating the multiple dimensions of sustainability and their relationships to policy developments, this task will increase the awareness on the implications and interactions of sustainable development, and enable the derivation of scientifically sound future scenarios. As a consequence, support for the EU Sustainable Development Strategy will be provided.

Expected results

- Decision support for the EU Sustainability Development Strategy by extending the traditional dimensions of sustainability.
- Uniform evaluation of policy simulation by applying Sustainability Impact Assessment.
- Enhancing the relevance of policy simulations by incorporating them into a stakeholder consultation process.

Milestones

- Month 10: Workshop 2 (in co-operation with WP 1 and 2)
- Month 14: Workshop 3 (in co-operation with WP 2)
- Month 18: Conference 1 (in co-operation with WP 4)
- Month 23: Workshop 4 (in co-operation with WP 1 und 2)
- Month 24: Summary and documentation of Workshop 4.
- Month 28: Conference 2 (in co-operation with WP 4)
- Month 30: Final Report

Deliverables

- Month 5: Participation in Workshop 1 to prepare the stakeholder consultation process
- Month 10: Workshop 2 (in co-operation with WP 1 and 2)
First designs of policy simulations
- Month 14: Workshop 3 (in co-operation with WP 2)
First results of policy simulations
- Month 14: First draft of Working Paper on policy simulations
- Month 18: Conference 1 (in co-operation with WP 4)
First presentation of project results
- Month 23: Workshop 4 (in co-operation with WP 1 and 2)
Refining the policy simulations
- Month 23: Second draft of Working Paper on policy simulations
- Month 28: Conference 2 (in co-operation with WP 4):
Final presentation of project results
- Month 28: Final version of the Working Paper
- Month 30: Final report

2.3.4 Work package 4: Interaction with non-European institutions

Work package number	4	Start date or starting event:				Month 1						
Participant id	1	2	3	4	5	6	7	8	9	10	11	12
Person-months per participant					2,5							

Objectives

Extending the communication with non-European institutions involved in research and design of sustainability policies.

Description of work

This workpackage fosters interactions with modelling communities outside of Europe in order to augment the perspectives on sustainability issues and on related future policy scenarios. The main task of this workpackage is to extend the network of excellence for modelling groups working on sustainability issues that was initiated by TranSust, and has proven to be particularly valuable for comprehensive discussions and improved communication among research groups from different countries. In order to build on TranSust and improve the already existing network on a global scale, special attention is paid to contacts with non-European institutions. For this purpose, already existing communication with the research community in the United States will be strengthened, and new contacts with Japanese and Australian research groups will be promoted, including new perspectives both in the context of modelling and policy issues.

The core activities of workpackage 4 are:

- Extension of the current network of modelling groups devoted to sustainability issues to non-European research communities.
- Increasing communication, information exchange and dissemination of existing research across European and non-European institutions.
- Assuring quality of the project's outcome through peer review by the participating non-European institutions.
- Exchanging information about policy issues addressed in the simulation exercises conducted within the TranSust.Scan project.

This interaction will be most evident at the workshops and especially at the conferences organised by TranSust.Scan, where selected leading sustainability experts not directly involved in the project will serve as scientific advisers. Based on previous experience with external scientific experts, TranSust.Scan is expected to benefit significantly from this work package . Indeed, the extended communication activities will serve several aims:

- They will expand the knowledge of existing research on sustainability modelling that has been done within the TranSust community by including all major research groups.
- They will include the results of these research groups in the development of policy scenarios, and improve the analytical framework for sustainability scenario building.
- They will stimulate global efforts for improving the capability of economic models to deal with sustainability issues.

This workpackage will thus improve the project's support to current and future policy decisions in relation to the EU Sustainable Development Strategy as well as the project's ability to identify pressing future research needs.

Expected results

- Widened perspective on sustainability issues and on scientifically sound future scenarios through increased information exchange activities.
- Decision support for current and future EC policies through improved dialogue on sustainability issues

Milestones

- Month 18: Conference 1 (in co-operation with WP 3)
- Month 28: Conference 2 (in co-operation with WP 3)
- Month 29: Contributions to final report

Deliverables

- Month 10: Intermediate comment summarising views of non-European modelling groups on first draft of Working Papers of WP 1
- Month 16: Intermediate comment summarising views of non-European modelling groups on first draft of reports of reports of WP 2
- Month 18: Interaction at Conference 1 (in co-operation with WP 3)
- Month 22: Intermediate comment summarising views of non-European modelling groups on first draft of Working Papers of WP 3
- Month 28: Conference 2 on a global view of extended sustainability considerations in the context of scenario building (in co-operation with WP 3)
- Month 29: Final comments summarising experiences and views of non-European modelling groups on Working Papers of WP 1, WP 2 and WP 3

2.3.5 Work package 5: Management, internal and external dissemination

Work package number	5	Start date or starting event:			Month 1							
Participant id	1	2	3	4	5	6	7	8	9	10	11	12
Person-months per participant	4			0,5	0,5		0,5		0,5	0,5		0,5

Objectives

Co-ordination of the project and allocation of responsibilities for joint activities, ensuring high-quality management of the whole project.

Description of work

The co-ordinating partner is in charge of management and of the project as a whole. He has to ensure that a common understanding of the project is achieved and that communication with all participating institutions is maintained. This co-ordinator will also be responsible for the organisation and the realisation of the kick-off meeting, where the participants will finalise the detailed workplan and schedule for the project. This detailed project plan will be prepared by the co-ordinating partner immediately after the kick-off meeting. Furthermore, the co-ordinator will provide continuous monitoring of the progress of individual tasks and check the overall coherence of the project. The co-ordinator will also organise the meetings of the scientific supervisory board.

In addition, a crucial task for the success of the project is to ensure a close dialogue with relevant stakeholders within and outside the Commission, in order to maximise the policy relevance of the project. The project co-ordinator is therefore in charge of ensuring the constant cooperation with relevant institutions representing stakeholders relevant to the project.

Using the Internet as the main communication tool within the network and as a fast publishing platform, a central task to be handled by the co-ordinator is the development and continuous updating of the website in order to provide optimum information flows into, within, and out of the network.

Also the, workpackage leader takes part of the responsibility for co-ordinating - and also allocating resources – in order to manage project activities within their respective work package .

The preparation of a publication plan that includes various types of outputs, ranging from more extensive scientific publications aimed at serving as a reference on the design of sustainability policies, to concise policy recommendations emerging from the project, will mark the last milestone of the project.

Expected results

- Widened perspective on sustainability issues through increased communication, information exchange, and dissemination activities.
- Decision support for EU Sustainable Development Strategy through clear description of analytical framework for environmental sustainability scenario building, including the methodology and the results.
- Decision support for current and future Commission policies through improved dialogue amongst leading research institutions and with crucial stakeholders.

Milestones

- Month 1: Kick-off meeting
- Month 2: Detailed work plan
- Month 15: Intermediate report on activities
- Month 30: Dissemination of all final TranSust.Scan Publications

Deliverables

- Month 1: Kick-off meeting
- Month 2: Update of website
- Month 15: Interim report about the progress of the project
- Month 30: Final Publication as a manuscript for a book that summarises the insights and identifies future research needs on the basis of TranSust.Scan, describing in particular the methodology of the analytical framework for sustainability scenario building and the resulting range of sustainability scenarios. This publication will serve as a reference on the design of models incorporating sustainability scenario building.

2.4 TranSust.Scan's next steps towards its objectives

The previous section has provided the framework of TranSust.Scan's work programme. In this section we want to specify the next work steps of the project that will bring us towards the final objective. In particular due to the linking with the FORESCENE project a further re-focussing has become necessary.

The links that are to be established between TranSust.Scan and the complementary project FORESCENE require that potential double coverage of topics needs to be excluded, given that FORESCENE has a particular expertise in some of the topics also covered by TranSust.Scan.

At TranSust.Scan's kick-off meeting that took place in Brussels on February 21, 2006, the topics that are expected in particular to be dealt with by FORESCENE were identified as follows:

- water
- land use and landscape
- biodiversity
- natural resources
- waste

Against this picture, the participants at the TranSust.Scan kick-off meeting have together identified the topics (and the corresponding modelling tools) to be covered by their project. Some overlaps are envisaged, but given the complementarity of the projects they are welcomed as contributing from different approaches to resolving the complexities related to the sustainability issue. In addition, some additional dimensions have been stressed to comprehensively tackle the project's objectives, as stated in the first three work packages.

Let us first highlight which topics have been pinpointed to become the focus of TranSust.Scan, indicating also which modelling tools of the project participants are adequate to tackle these issues. Table 2 shows thus the interaction between work package 1 and work package 2:

Table 2: TranSust.Scan's modelling approach to the main research objectives

Research topic	Modelling approach	
	Modelling tool	Specific focus
Energy and GHG emissions	PACE	competitiveness
	MARKAL	security
	DEMETER	CCS
	WITCH	technological change
	GAIN	restructuring
Climate impacts	FUND	
Land use, agriculture, forestry	DART	
Transport	IMACLIM	

In addition, a further dimension that covers “components” of sustainable path are included in the research approach. In particular, the following variables (the so-called “specific targets”) will be used to identify sustainability according to the outline in work package 2:

- competitiveness
- economic development
- energy security
- benchmarks for stocks of natural resources

A further link between work package 1 and work package 2 is provided by the methodological dimension, which will further help to cope with TranSust.Scan’s research topics in a comprehensive way. In particular, focus will be given to the following methodological aspects in order to better understand the complexities related to sustainability:

- technological change
- uncertainty, sensitivity analysis
- reduced form modelling

Based on these three dimensions – the overall research topic, the specific focus on variables able to identify sustainability, and the methodological approach able to further clarify the perspective on sustainability – Table 3 provides a detailed overview of the issues on which the various project partners that dispose of modelling tools will focus:

In order to live up to the project’s expectations, the remaining three partners will specifically concentrate on the policy side of the issues that have been chosen to be the focus of TranSust.Scan. In particular, CSIC, UCD, IEEP are asked to be frontrunners for policy analysis in order to pave the way towards the scenario analysis of TranSust.Scan’s second year. For this purpose, each of them will prepare a paper on a specific overview of the relevant policy issues, policy measures on national and EU level, scanning what is on the current policy agenda and what do we expect for the policy during the next years. A first focus is on the short/medium term (2015/30), whereas these partners will in the second phase of the project concentrate on the long-term perspective, relying on model results that emerge from the TranSust.Scan activities of the first phase. Table 4 provides an overview on the specific research contributions of the three partners.

In the first phase of the project, the two groups of researchers - the modelling work as specified in work packages 1 and 2, and the policy work as specified in work package 3 – will mainly work independently of each other. However, interactions between them will take place in order to ensure that important insights of each work strand are incorporated in ongoing work. Then, in the second phase, there will be an intense exchange of the policy analysis with the relevant modelling groups to discuss the inputs that each of the partners needs in order to contribute to the accomplishment of the final TranSust.Scan objectives.

Table 3: TranSust.Scan's modelling work programme

	Modelling approach			
Partners	TranSust.Scan research topic	Research focus	Additional dimensions	Modelling tool
ZEW	Energy and GHG emissions	Analysis of environmental impacts of energy sector in relation to climate change, focus on top-down side of energy.	economic development and competitiveness	PACE
SMASH	Transport	Analysis of environmental impacts from transport (pollution coming out of transport, both local and global impacts), including also air pollution. Possible inclusion of housing sector.		IMACLIM
ECN	Energy and GHG emissions	Bottom-up analysis of different types of energy, focus on carbon capture and storage (CCS).	energy security	MARKAL
IVM	Energy and GHG emissions	Bottom-up analysis of different types of energy.	carbon leakage	DEMETER
LIFEA	Environment	Analysis of all environmental issues for one country (Poland) to make a case study of how issues examined from the others at global scale actually look like if they are implemented at local level.	economic development	W8D model
FEEM	Energy and GHG emissions	Analysis of climate change and energy (e.g. impacts, feedbacks).	technological change and spill-overs	WITCH
IfW	Land use, agriculture, forestry	tbd	benchmarks for stocks of natural resources	DART

WIFO	Energy and GHG emissions	Evaluation of restructuring in particular the energy side of economy at EU 15 level. Same approach for building sector.	restructuring	GAIN
UniHH	Climate impacts	Evaluation of impacts resulting from climate change.	benchmarks for stocks of natural resources	FUND

Table 4: TranSust.Scan's policy work programme

Partners	TranSust.Scan research topic	Research focus
UCD	Transport	Policy report on transport, design of policy scenarios.
CSIC	Land use, agriculture, forestry	Policy analysis for international level plus indications on how land use should be integrated in modelling phase.
IEEP	Energy and climate	Analysis of policy developments related to energy and climate change.

This section has highlighted how the research that will lead to the envisaged results of TranSust.Scan will be divided amongst the project partners in order to deliver the results in a best-possible way. The work programme has thus been clarified, a more detailed work plan is provided (as is foreseen as a milestone in work package 5), and first steps towards the accomplishment of the project's research objectives have been initiated.

Let us emphasise that the approach outlined in this section is in accordance with the objectives stated in the first three work packages of TranSust.Scan, namely WP 1 "Integrating and extending the analytical framework", WP 2 "Dealing with extended facets of sustainability", and WP 3 "Developing policy scenarios". The deliverables, as summarised in the next section, are in line with the more detailed approach adopted at the Kick-off meeting.

2.5 Deliverables list

DL	Deliverables list			
Deliverable No	Deliverable title	Delivery date	Nature	Dissemination level ¹
D-1	Kick-off meeting	1	O	CO
D-2	Detailed workplan	2	R	RE
D-3	Website	2	O	PU
D-4	Working papers	5, 11, 23	R	PU
D-5	Workshop 1	5	O	RE
D-6	Workshop 2	10	O	RE
D-7	Workshop 3	14	O	RE
D-8	Conference 1	18	O	RE
D-9	Workshop 4	23	O	RE
D-10	Conference 2	28	O	PU
D-11	Publications	30	R	PU

At the Kick-off meeting in Brussels, also preliminary discussions on the various meetings that represent an important part of TranSust.Scan's deliverables have been started. Let us summarise the preliminary dates, emphasising that they still need consensus by the FORESCENE group:

- TranSust.Scan Kick-off, Brussels, 21 February 2006
- Joint TranSust.Scan – FORESCENE Kick-off, Brussels, 13 March 2006
- Workshop 1 on overview of preliminary papers (methodological perspective), Vienna, 9-10 October 2006
- Workshop 2* (joint with FORESCENE) on scenario development, Dublin/Brussels, January 2007
- Workshop 3, Dublin/Paris, March 2007
- Conference 1, Italy, September 2007
- Workshop 4* (joint with FORESCENE) on mutual benefits and interactions, January 2008
- Final Conference, Brussels, May 2008

Stakeholder meetings, a further crucial component of TranSust.Scan, will be attached to workshops or held during workshops, in particular in the context of policy-relevant meetings (e.g., Workshop 2).

¹ Codes for the dissemination level:

PU = Public

PP = Restricted to other programme participants (including the Commission Services).

RE = Restricted to a group specified by the consortium (including the Commission Services).

CO = Confidential, only for members of the consortium (including the Commission Services).

* One day joint meeting, second day devoted to TranSust.Scan issues